

Remarks

In the office action mailed September 2, 2004, objections were made to the drawings, the abstract and the title; claim 7 was rejected under 35 U.S.C. §112, ¶2; claims 1 - 7, 10, 12, 14 and 15 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,991,551 (to Bacs, Jr. et al.); claims 16 - 19 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 4,575,193 (to Greivenkamp, Jr.); claim 8 is rejected under 35 U.S.C. §102(e) over U.S. Patent No. 6,107,617 (to Love et al.); claim 11 is rejected under 35 U.S.C. §103(a) over Bacs Jr., et al.; claim 13 is rejected under 35 U.S.C. §102(b) over Bacs Jr. et al. in view of U.S. Patent No. 5,453,844 (to George et al.); and claim 20 is rejected under 35 U.S.C. §102(b) over Greivenkamp, Jr. in view of Love et al.

Responsive to the office action, the title and abstract are amended and formal drawings are being submitted herewith. Claim 7 is amended to address the antecedent basis objection with regard to the term "liquid crystal cell" therein.

The present invention is directed toward a system that selectively blurs an input optical image using birefringement elements in accordance with an embodiment.

The Bacs, Jr. et al. reference discloses an autostereoscopic imaging apparatus and method that employs a parallax scanning lens aperture. In particular, the system involves moving a lens aperture relative to a lens in a

parallax scanning pattern through diverse disparity points that are displaced from the optical axis. This is disclosed to provide a plurality of time-spaced images that, when combined in succession, provide an illusion of a three-dimensional image.

The system of Bacs, Jr. et al. does not disclose a system that includes a spatial light modulator for selectively modulating the input image such that at least one portion of the input image may be blurred as it passes through the spatial light modulator as claimed in claim 1. Moving an aperture is not the same as selectively blurring portions of an input image. The Bacs, Jr. et al. reference discloses that in an example, the system may move the lens aperture only when the camera shutter is open to enhance the autostereoscopic scene image (Bacs, Jr. et al., col.10, lines 14 - 49). In connection with this example, the Bacs, Jr. et al. reference states that:

When the image frames are displayed, any foreground motion will appear continuous. Thus, annoying strobing effect (jitter) of any foreground and background motion is avoided. Instead, enhanced blurring (relative to the continuous parallax scanning motion approach) of foreground and background motion will be achieved to more effectively mask these motion artifacts.

Bacs, Jr. et al. (col. 10, lines 33 - 39)

The use of the term "blurring" in line 36 of column 10 of the Bacs, Jr. et al. reference, therefore, relates to changes (such as strobing effects of jitter) from one frame to a successive frame of *both* foreground and background

information. The reference discloses no device that provides *selective* blurring or a portion of an input image. Claim 1, therefore, is submitted to be in condition for allowance. Each of claims 2 - 11 depends either directly or indirectly from claim 1 and is also submitted to be in condition for allowance.

Independent claim 12 is directed to a system that includes, in part, an array of birefringent elements through which an image field may pass, wherein the birefringent elements are each individually selectable to permit selective birefringence of an input image. The optical element 90 shown in Figure 8 of Bacs, Jr. et al. does not provide selective birefringence. The optical element 90 instead provides selective transparent or opaque cells wherein the transparent cells provide a lens aperture. Claim 12, therefore, is submitted to be in condition for allowance. Claim 13 depends directly from claim 12 and is also submitted to be in condition for allowance.

Independent claim 14 is directed to a system that includes, in part, a plurality of electrodes positioned adjacent a liquid crystal cell such that portions of the liquid crystal cell may be selected to provide birefringence of an image field. Again, the optical element 90 shown in Figure 8 of Bacs, Jr. et al. does not provide selective birefringence. The optical element 90 instead provides selective transparent or opaque cells wherein the transparent cells provide a lens aperture. Claim 14, therefore, is submitted to be in condition for allowance. Claim 15 depends directly from claim 14 and is also submitted to be in condition for allowance.

The Greivenkamp, Jr. reference discloses an optical color dependent spatial frequency filter that includes a pair of birefringent elements that are able to change the polarization state of light between them such that the polarization of a first color is changed by a first amount, and a polarization state of a second color is changed by a second amount. The filter is disclosed to be used as a color image sensor. The Greivenkamp, Jr. reference discloses that the color dependent spatial frequency filter limits the spatial frequencies in certain color components of the input image, and limits the spatial frequencies in other color components to lower frequencies. The color dependent spatial filter is disclosed to reduce aliasing in each color in an image "without unnecessarily sacrificing resolution or sharpness in any of the colors of the image." (Greivenkamp, Jr., col. 4, lines 1 - 5). The Greivenkamp, Jr. reference discloses in Figure 2, thereof, a first birefringent element 16 and a second birefringent element 20.

Independent claim 16 is directed to an imaging system that includes, in part, a spatial light modulator that includes a first area for refracting the input image along a principle axis of refraction, and a second area for refracting the input image along a principle axis of refraction and along a second axis of refraction that is angularly disposed to the principle axis of refraction. The Greivenkamp, Jr. reference does not disclose a spatial light modulator that first and second areas, only one of which provides birefringent refraction. Each of the first and second birefringent elements 16 and 20 provides birefringent output across the entire element (as opposed to selective birefringent output at first and

second etc. areas). The subject matter of claim 16, therefore, is not disclosed in the Greivenkamp, Jr. reference. Claim 16, therefore, is submitted to be in condition for allowance. Claim 17 depends from claim 16 and is also submitted to be in condition for allowance.

Independent claim 18 is also directed to a system that includes, in part, a spatial light modulator that includes a first area for refracting the input image along a first axis of refraction and a second axis of refraction, and a second area for refracting the input image along the first axis of refraction and along a third axis of refraction. The Greivenkamp, Jr. reference does not disclose a spatial light modulator that includes first and second areas, only one of which provides birefringent refraction. Moreover, the Greivenmkamp, Jr. reference does not disclose a birefringent element that first an second areas where each area provides different birefringence angles. The subject matter of claim 18, therefore, is not disclosed in the Greivenkamp, Jr. reference. Claim 18, therefore, is submitted to be in condition for allowance. Claims 19 and 20 depend from claim 18 and are also submitted to be in condition for allowance.

Each of claims 1 - 20 therefore, is respectfully submitted to be in condition for allowance. Favorable action consistent with the above is respectfully requested

Respectfully submitted,



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